Space Weather Forecast

Issued on Sunday, 16 October 2022 at 13:06 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: No significant space weather is expected.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity over the past 24 hours has been Low, with an isolated long period Common-class flare peaking at 15/1432 UTC from the large sunspot group that is located beyond the northwest limb. This is now transiting the far side of the solar disc. There are currently four numbered regions on the visible disc. All regions are small and magnetically rather simple, with only the bipolar group in the southwest quadrant showing recent consistent growth. There are also a number of filaments (lines of material held together by the Suns magnetic field) on the Earth-facing disc. These can be a source of coronal mass ejections (CMEs), and one of these erupted in the southwest around 15/1430 UTC, with a possible faint CME visible in imagery. Modelling was attempted and results do not indicate any significant Earth directed ejecta. No other Earth-directed CMEs have been observed.

Solar Wind / Geomagnetic Activity: The solar wind, is indicative of ongoing coronal hole connection. Elevated solar winds showed a slow rising trend through the period, with brief peaks just reaching Strong levels. The total magnetic field strength was weak, with the important north-south component weakly variable. Geomagnetic activity was mainly Quiet to Unsettled (Kp 1 to 3), with an Active period 15/1800-2100UTC, and 16/0900-1200UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be Low or Very Low, barring any significant sunspot development on the visible disc.

Solar Wind / Geomagnetic Activity: There are currently no Earth-directed CMEs, however there is a low chance that peripheral effects of CMEs passing south of Earth late day 1 (16th) or 2 (17th), and again late on day 2 into 3 (17th-18th) may be observed. Otherwise, ongoing fast wind influence from CH32/- is expected to gradually ease towards background. Geomagnetic activity is forecast to be Quiet to Unsettled, but with a chance of isolated Active intervals day 1 (16th) from ongoing fast wind effects, or with any possible influence from the potential glancing CMEs late day 1 (16th) or early day 2 (17th), and again late on day 2 (17th) into day 3 (18th).

Energetic Particles / Solar Radiation: The count rate of energetic particles is expected to remain at background levels with no solar radiation storms occurring.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Met Office

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	5	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	3	1	1
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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